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NAVAL WAR COLLEGE
Newport, R.I.



***Maritime Trade Defense: Establishing the Joint Force Maritime Trade Component
Commander***

By,

Shane Thomas Marchesi

LCDR, U.S. Navy

A paper submitted to the Faculty of the Naval War College in partial satisfaction of the
requirements of the Department of Joint Military Operations

The contents of this paper reflect my own personal views and are not necessarily endorsed by
the Naval War College or the Department of the Navy.

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Abstract

Future war plans must prepare operational commanders to defend maritime trade during high intensity conflicts against near-peer competitors. Improvements in technology and weapons proliferation also require leaders to consider area denial when executing the operational functions of sustainment and protection. These challenges are particularly true with respect to maritime trade defense in the Pacific Command area of responsibility, where commanders may be required to deploy and sustain forces over vast distances and against a multiplicity of threats. In a high intensity conflict or an access denied environment, geographic combatant commanders must protect and defend maritime trade by creating a dedicated Joint Force Maritime Trade Component Commander (JFMTCC) to oversee strategic deployment and sustainment operations. The JFMTCC will give the Combatant Commander a centralized command and control structure for joint maritime trade defense, improve unity of effort for multi-national forces, other governmental agencies, and non-governmental agencies, and provide unity of command for the protection of ports in hostile areas of operation.

Introduction

History demonstrates that the operational function of sustainment is integral to war. Battles are won or lost based on the logistics that reach the front lines; culmination is inevitable without supply. The two world wars of the 20th century highlight the importance of sustainment to operational commanders and the significance of maritime trade defense during global conflict. Challenges to command and control, unity of effort, and joint force integration made maritime trade defense difficult during both high intensity conflicts, in part due to a lack of preparedness and command structure when war began.

Future war plans must prepare operational commanders to defend maritime trade during high intensity conflicts against near-peer competitors.¹ Improvements in technology and weapons proliferation also require leaders to consider area denial when executing the operational functions of sustainment and protection.² These challenges are particularly true with respect to maritime trade defense in the Pacific Command area of responsibility, where commanders may be required to deploy and sustain forces over vast distances and against a multiplicity of threats.

In a high intensity conflict or access denied environment, geographic combatant commanders must protect and defend maritime trade by creating a dedicated Joint Force Maritime Trade Component Commander (JFMTCC) to oversee strategic deployment and sustainment operations. The JFMTCC will give the combatant commander a centralized command and control structure for joint maritime trade defense, improve unity of effort for multi-national forces, other governmental agencies, and non-governmental agencies, and provide unity of command for the protection of ports in hostile areas of operation.

To support this proposal, the author will discuss past high intensity conflicts as they pertain to maritime trade warfare, consider the impact of globalization and networking on the Maritime Trade System, identify command and control challenges faced by today's commanders in deployment and sustainment operations, and offer recommendations for resolving challenges in the defense and protection of maritime trade.

Maritime Trade Defense Command and Control

When a heavy attack developed I found nothing so heartrending as the constant reduction in the number of ships in a convoy. One had to take down the cardboard symbol from the chart, erase the scribbled total on it and substitute a lower figure, perhaps only to repeat the process in a short while.³

— LCDR D.P. Capper, RNVR

There are a myriad of vignettes to study when considering command and control (C2) as it pertains to the operational functions of sustainment and protection. However, two major conflicts in the industrial age influenced the execution of sustainment from the sea – World Wars I and II. Each war was fought differently, with technology shaping the execution of maritime trade defense. Nonetheless, even with differing technologies, each war had similar C2 deficiencies that indicate potential trouble spots in the future.

During World War I, modern naval theories were put to the test for the first time and either proven valid or rebuked. First, attacks on merchant shipping validated both maritime trade warfare itself and convoy tactics. British maritime trade defense at the start of WWI centered on Julian Corbett's theory that convoy operations were too difficult to execute, modern changes to the maritime environment rendered convoys obsolete, and the randomness of maritime shipping made it more challenging for enemy forces to destroy a single ship (as opposed to a convoy of ships).⁴ Unfortunately for the British, their lack of

attention to maritime trade warfare initially resulted in disaster. While random shipping patterns can make search and destroy operations challenging for the aggressor, it makes shipping defense in those scattered patterns nearly impossible. In addition, chokepoints, shipping lanes, and water depth all ensure that shipping eventually converges near ports and littoral areas, making random shipping patterns less effective than originally theorized.

World War I validated convoys and revealed a few unique issues when integrating merchant mariners and naval forces. Sanctuary for joining convoys proved important. After 1917, the American coastline gave merchants a “free” zone to congregate before pushing into dangerous waters across the Atlantic. Training was established for merchantmen, allowing masters to travel in convoy for a week in the West Atlantic before entering the danger zone on the East Atlantic.⁵ Convoys also prioritized defensive operations – avoidance, protection, and speed – and established the fundamental purpose of convoying materials through dangerous waters.

Early in World War I, ports were not equipped to handle the volume of ships that arrived there and the materials in the ships themselves were difficult to sort by type. Speed when unloading was of the essence; ships outside the port were vulnerable to attack and supplies needed to get to the front lines quickly. The Allied command and control structure was not correctly established in the first three years of the war to support the dynamic environment required at convoy destinations.⁶

World War I revealed the complexity of multi-national operations, specifically when dealing with maritime trade defense. The Americans joined the war in 1917 and even when fighting alongside our closest ally Great Britain, there were often conflicts of interest. The British wanted to use the American Navy to move goods across the ocean in a supply effort;

the Americans wanted to use their Navy to ensure U.S. soldiers made it to the mainland safely. The British Royal Navy sought to see American naval forces placed under Britain's operational control (OPCON) in order to maximize their previous experience in World War I when protecting shipping.⁷ The United States resisted. Two close allies, with essentially the same end state in mind, found themselves at odds with differing strategies on how to use naval forces.

World War II once again brought war to the United States, now on two fronts – Europe in the Atlantic and Japan in the Pacific. In the Atlantic theater of war, many of the old lessons from World War I were lost. In the Pacific, War Plan Orange, the Navy's quarter century war game against Japan, did not address the specific details of convoy operations.⁸ Therefore, at the start of the war there was no central organization in place to defend maritime trade. Essentially, four major commands each had a role in convoy protection.⁹ The disputed command and control structure created issues with unity of effort, unity of command, and joint military operations throughout the early years of the war.

Command and control issues surfaced when trying to integrate joint forces. In the interim between world wars a new warfare tool developed, the aircraft, requiring joint operations when incorporating land-based air. Early in World War II, it became apparent that airpower was essential when conducting naval activities, including maritime trade defense. Aircraft conducted reconnaissance, provided quick reaction time to adversary assaults, and carried the necessary weapons to destroy U-boats that attacked convoys. While open ocean convoys required heavy fleet support, aircraft integrated into coastal convoy operations relieved the surface Navy of some of their maritime trade defense responsibilities. However, the command and control structure was so poor that coordination between surface,

air, and submarine assets was limited at the operational level of war.¹⁰ Joint operations were nearly nonexistent. In order to solve the command and control problem (and indicating the seriousness of the issue), U.S. Admiral Earnest King consolidated submarine operations under 10th Fleet.¹¹ His extraordinary action helped resolve the C2 issue associated with Allied convoy operations then, but did not provide a permanent fix for future wars.

In direct contrast to Allied maritime trade defense in the Atlantic, the Japanese had a fundamentally flawed approach to maritime trade warfare in the Pacific. While tactically the Japanese Navy exhibited great skill, operationally they misunderstood the nature of maritime trade warfare, the importance of sustainment, and the fundamentals of command and control. Japanese leadership believed they could command the sea through a decisive, Mahanian naval battle and then simply limit American supply efforts in the Pacific. It was a theory that worked against the Russian Navy at Port Arthur, but failed to address the complexities of war with a near-peer competitor. Defensively, the Japanese conducted few convoy operations.¹² Command and control problems hindered Japanese efforts to defend their shipping. Four different organizations managed Japanese maritime trade defense.¹³ In August 1943, the Japanese government finally consolidated its C2 structure and formed an independent Combined Escort Command. By the time the Combined Escort Command formed, it was too late. Japan's failure to defend maritime trade during World War II resulted in over 8.1 million tons of lost shipping over four years.¹⁴ Japan's steel production levels dropped from 5.12 million tons in 1940 to 0.8 million tons in 1945 and only 90,000 tons of oil was left in Japan at the end of the war.¹⁵

Historical experiences in naval warfare do not dictate future operations, but they do appear to indicate that there are fundamental tenets to the operational level of maritime trade

defense. Prior to the outbreak of war, there is an opportunity for operational commanders to set conditions that minimize losses after the start of lethal operations. The operational environment needs preparation for the eventuality that trade will come under attack. After conflict begins, both major wars confirmed that convoy operations remain the best way to sustain via the sea. Convoy operations require centralized command and control and, in contemporary warfare, the ability to quickly re-route forces based on changes to the battle space. Unity of command and unity of effort are necessary for successful sustainment and protection of forces. At the start of each conflict presented, command and control lacked the structure needed to control naval, joint, and allied forces. Port facilities were not ready to accept shipping in high volumes and port protection was constantly challenged. Only a strong, centralized C2 structure can coordinate all of the activities required to conduct maritime trade defense during the friction of war.

Globalization, Cyber, and Networking Effects on Maritime Trade

Since World War II, changes in vessel design, propulsion, cargo handling, and intermodal transport technology, including the advent of containerization, have revolutionized shipping by lowering per unit transport costs, increasing vessel capacity, and speeding "turnaround" time to unload/load a vessel in port. These technological advances affecting sustainment also fueled globalization, a term applied to both economic considerations and geo-political concerns. Globalization, according to the Defense Science Board is, "the integration of the political, economic, and cultural activities of geographically and/or nationally separated peoples."¹⁶ By definition, globalization transforms certain aspects of warfare, including maritime trade defense.

Alfred T. Mahan, the most dominant American naval theorist of the 20th century, emphasized the idea of the sea as a communication tool with the primary means of that communication being economic.¹⁷ Corbett, Great Britain's prominent 20th century theorist, also wrote extensively on the importance of sea lines of communication (SLOCs) and their role in developing naval policy. Nations, and eventually international law, reflected the idea of co-use across the oceans. Globalization, specifically with respect to economic interaction, grew. Nations, while maintaining their own identities, began to increase reliance on one another for economic trade.

The great wars of the twentieth century saw some impact from globalization. However, during those years, products and shipping were mainly national in nature. Products were, for all intents and purposes, built in one place and shipped to another on a nationally flagged vessel.¹⁸ Today, the manufacturing process itself is networked – a complete logistics system brought on by containerization.¹⁹ An example is Ford Motor Company. In 1997, Ford owned 154 factories and another 30 joint-venture plants. These plants were located throughout the world, including the majority of the joint-venture plants in Southeast Asia.²⁰ Considering global manufacturing, the future of maritime trade warfare will require more diplomatic interaction, increased information, greater military precision, and a higher degree of industry knowledge. The commander responsible for maritime trade defense must now interact with the entire DIME, not simply the military aspect of it.²¹

Additional economic integration between nations increased international shipping requirements. Initially, states simply measured imports versus exports. Now, with the advent of end-to-end logistics, the Maritime Transportation System touches nearly ninety five percent of all overseas trade.²² As an attempt to increase efficiencies and decrease costs,

two phenomena occurred: ships grew in size and hub ports developed. The increase to the size of shipping in the twenty first century is immense. At the end of the previous millennium, large container ships ranged in size from 4000-6000 TEUs²³. These ships were able to travel freely throughout the world's SLOCs and through most ports. Globalization brought a desire to reduce costs and, with that desire, containerization drove increased ship size. In 1997, Ocean Shipping Consultants (OSC) declared that the 8,000 TEU ship, originally termed the megaship, would dominate maritime trade by 2010.²⁴ Continuing the trend after 2010, shipping size continued to grow. Maersk Line, a leading company in container ship development, is set to launch an 18,000 TEU container ship in 2013, named the Triple E Vessel.²⁵ The 18,000 TEU ship is designed specifically to transit through the draft limited Strait of Malacca with maximum cargo and appears, at least in the near term, to be the largest ship design capable of transiting that important chokepoint.

Larger shipping brings additional challenges to maritime trade defense. All ports are not equipped to accept these large ships. In addition, total logistics requires greater efficiencies in port systems. Hub ports, used as distribution centers, are focal points for shipping. They accept the majority of goods and then push them out via sea or other transportation methods. Mega ports, designed for large ships, can accept smaller shipping. In contrast, smaller port facilities cannot accept megaships. With the continuing trend of increased ship size, hub ports are growing in importance. They are chokepoints for logistics and their defense becomes vital when considering sustainment in high intensity conflicts.²⁶

While globalization and the use of the global commons drove increased economic interaction, increased shipping sizes and hub ports, cyber defines the web of logistics that currently characterizes our Maritime Transportation System. Once simply linear in nature,

goods manufactured in one country traveled on a predetermined route to another for sale. Networking makes maritime trade multi-dimensional. Cyber connects economic interests, infrastructure, and even elements of space to the maritime trade domain. It helps automate functions and increase efficiencies. Navigation is a primary example of how cyber and new technologies affect shipping. The Electronic Chart Display and Information System (ECDIS) directly interacts with the Global Positioning System (GPS) to decrease manpower requirements for navigation. The Automated Identification System (AIS), a transponder for ships, sends out information on ship id, position, heading, length, beam, type, draft, and hazardous cargo carried. The Integrated Bridge System (IBS), a multisource integration tool, combines all of the information available to ships and networks it.²⁷ The bridge system can link to shipping companies via satellite communications (INMARSAT) and a modem via the Internet.²⁸

In addition to improving navigation, cyber technology links shipping to port facilities. Cargo destinations shift after vessels leave port. Electronic Data Interchange (EDI) allows the electronic transmission of commercial documents in standard format directly from a company's computers to those of another company.²⁹ Vessel Traffic Service (VTS), an extensive traffic management system within ports and waterways, monitors port traffic to maximize ship throughput.³⁰ As efficiencies grow, networking between sea and land increases. These systems become necessary to manage a new system of commerce and, specifically, maritime trade.³¹ All of these tools are vulnerable to cyber attack, placing an increased requirement on commanders to understand the merchant industry and the world of cyber technology in order to better protect it.

Maritime Trade Defense in the U.S. Pacific Command

Southeast Asia is an increasingly volatile area of the world. The fall of the Soviet Union created a power vacuum in the region left unattended as the United States focused its attention on war in the Middle East and Afghanistan. Essentially, a bipolar system became unipolar. Globalization increased means in the region and with more economic strength came increased military power. In addition, as a response to decreased U.S. presence in the region, alliances formed, with powers generally aligned with Japan or China.³²

Looking towards potential conflict in the region, there are several themes that dominate the political landscape. Attempts to claim sovereignty over the seas, and specifically fishing rights and natural resource exploitation in the Pacific, is a causal factor of political engagement in Southeast Asia. In contrast to contemporary norms promoting the global commons, nations are increasingly looking to control areas of the ocean in order to gain access to natural resources. The UN Convention Law of the Sea (UNCLOS) provides structure to the littorals. However, nations with overlapping economic claims or simply great military strength find themselves in conflict. The Spratly Islands, a nearly uninhabited island chain in the South China Sea, are a good example of overlapping claims. Five nations put claim to part of the island chain – China, Taiwan, Vietnam, Philippines, and Borneo. In 2011, Chinese navy and fishing vessels were frequently skirmishing with Vietnamese, Philippine, and Japanese maritime forces throughout the region, to include non-lethal, lethal naval activity.³³ If complexities in these conflicts grow, jurisdictional claims may restrict freedom of passage, creating international interest in regional disputes.

More obvious areas of interest in the South China Sea include the Korean peninsula and the island of Taiwan. War in these areas would bring great attention to maritime trade

defense, as inevitably prolonged conflict would spill over to the merchant marine. As a part of the increased militarization of China and the traditional aggressiveness of North Korea, military boundary zones in the area are on the rise. In 1977, North Korea “proclaimed” a 50-mile military boundary zone for the purpose of defending its national interests and sovereignty, attempting to prohibit the acts of foreigners, foreign military vessels, and foreign military planes.³⁴ China has two security zones, a military alert zone extending west of a line from the North Korean-China border; the other military exclusion zone is in the vicinity of Shanghai. All entry is forbidden, even innocent passage.³⁵ Combining these zones with increased naval activity out of China, it is clear that there are potential areas of conflict in the region.

As Mahan correctly identified in *The Influence of Sea Power on History 1660-1783*, geography influences naval operations.³⁶ Geography in Southeast Asia is no exception; features in the Pacific create significant chokepoints that are integral to maritime trade defense. There are five identified chokepoints for shipping in the region: the Malacca/Singapore Strait, Sunda Strait, Lombok and Makassar Straits, South China Sea and, East China Sea.³⁷ Of these three, Malacca, Lombok, and Sunda are the only real viable straits for container shipping, [with Malacca having some draft limitations].³⁸ If one strait became unavailable, shipping would need to divert to another to maintain the flow of goods throughout the region. Four major hub ports dominate the area: Singapore, Hong Kong, Kaoshing, and Pusan.³⁹ As previously discussed, hub ports and their availability have a significant impact on maritime trade defense. Geographic features also create scenarios where land based weapons can deny sea access for periods of time.⁴⁰ Shipping is more vulnerable to attack from more weapons now than ever before. The very nature of maritime

trade warfare in Asia limits where merchant shipping can travel and creates the potential for a more dynamic environment, requiring greater command and control over joint and multi-national forces when moving supplies during a high intensity conflict.

The Joint Force Maritime Trade Component Commander

Maritime Trade Defense is a fundamental responsibility of Geographic Combatant Commanders (GCCs) during a high intensity conflict. Sustainment and protection afford operational commander the logistics required to fight wars, whether limited or unlimited. The requirement for a centralized and strong command and control structure that can reach across the DIME is clear and requires the introduction of the Joint Force Maritime Trade Component Commander into our lexicon.

In the high intensity wars of the industrial age, merchant shipping inevitably came under attack. Over time, Mahan's theory of "command of the sea" transformed into a more realistic sea control concept. By accepting a limitation on sea control, a system was necessary to defend goods and supplies transported over the ocean. Convoying proved best for defending those goods. Convoy operations, as discovered in World Wars I and II, require a high degree of command and control. In the past, the Navy simply accepted those responsibilities as a part of its overall mission. Modern complexities when defending maritime trade require a more permanent and comprehensive structure than used in the past and dictate the establishment of a Joint Force Maritime Trade Component Commander.

Maritime trade defense evolved over time to become, by nature, a joint venture. In the modern military system, U.S. commanders assume joint operations. It is essentially built into the military's force structure, with certain services providing expertise in specific areas.

However, with the advent of long-range, area denial weapons and the potential for war with near-peer adversaries, commanders will need to reach beyond just a single area of operation or service to defend maritime trade. Defense will require joint efforts, using a myriad of national resources (to include space assets), often across geographic combatant commands, to defend long supply lines.⁴¹ The JFMTCC provides a commander specifically designed to execute these roles in support of maritime trade warfare.

Just as joint operations are built into our recent force structure, military leaders are leaning towards incorporating multi-national forces in a similar manner. Coalition nations can provide supplemental forces, intelligence information, and lead multi-national operations throughout the globe. Interacting with these forces and creating partnerships will be integral to defending trade in a high intensity conflict. The Joint Force Maritime Trade Component Commander can incorporate these partnerships into specific areas of maritime trade defense and, in only a short period of time, apply these relationships through exercises and real world challenges, such as in Southeast Asia. In addition, the JFMTCC can bridge what the French refer to as a divergence in the “interoperability of the mind.”⁴² Distinctive political situations affect multi-national force involvement differently. The JFMTCC can bridge the diplomatic gap with these multi-national forces and help them identify acceptable roles in maritime trade defense.

Perhaps the greatest difference between earlier and contemporary maritime trade defense is the combination of globalization and cyber networking into daily operations. Economies are intertwined and networked. Similar to conditions on land, protecting maritime trade requires fast information and an ability to discriminate. Shipping destinations change after ships are at sea; ports live on the backbone of the Internet to accept and move

goods. Acts of aggression can occur without any kinetic activity. Ships could be re-routed via cyber attack. An attack on GPS would slow a merchant mariner's capability to navigate narrow straits.⁴³ Shipping defense requires dynamic command and control. When a strait becomes unavailable due to hostilities, convoys need re-routing. AIS is a system which must be integrated with intelligence sources to encrypt its information. Once encrypted, its use must be incorporated into surface pictures and avoidance methods. A JFMTCC provides a central command to execute, coordinate, and unify these cyber maritime activities.

In order to coordinate unity of effort throughout all maritime agencies, interaction with other governmental agencies and non-governmental agencies is imperative. Specifically, operating within organizations of the merchant marine, such as the International Maritime Organization, and international governing bodies, such as the United Nations, is necessary for success. Military and merchant marine forces do not integrate without great effort. Training and interaction improves the possibility of success. The JFMTCC provides combatant commanders an immediate link to the merchant industry. It also provides the GCC direct access to diplomatic channels throughout the world; channels that may prevent adversaries from coercing or influencing foreign flagged merchant shipping into boycotting U.S. supply efforts.

Regional interaction through the JFMTCC will also allow GCCs to identify port facilities for use and defense. Hub ports need protection and their use likely increases the ability to defend them from conventional attacks. However, port facilities are particularly susceptible to irregular warfare from terrorist, non-state actors, and unconventional Special Forces. Port targets might include water access, electrical grids, telecommunications, computer networks, and land transportation networks out of port facilities. Currently, more

than six agencies are responsible for port security, with Coast Guard generally the lead.⁴⁴ The JFMTCC would provide the GCC with a direct link to the U.S. Coast Guard and Port Facility Security Officers throughout the concerned theater and an ability to network into Port Facility Security Plans.⁴⁵ The JFMTCC also supplies a staff to earmark additional ports for use if hub port throughput reduces during war. Smaller merchant shipping, with smaller TEUs than megaships, can be identified in case kinetic activity closes hub ports. The JFMTCC establishes the necessary relationships prior to the outbreak of war to best defend the Maritime Transportation System and improves the link between the geographic combatant commander and the organizations in which operations depend.

Counterargument

A strong counterargument to the establishment of a Joint Force Maritime Trade Component Commander is the Joint Force Maritime Component Commander (JFMCC) already provides the functionality of a JFMTCC. The introduction of another commander concerned with naval warfare creates confusion in the maritime environment and can reduce command and control effectiveness. Interaction between maritime commanders outside of the JFMCC diminishes unity of effort when working across different lines of effort, such as multi-national forces, and reduces unity of command when defending ports.

In previous high intensity wars, the United States Navy was responsible for maritime trade defense. The focus of defense was physical security, or convoy operations. Contemporary maritime trade defense emphasizes sea control and choke point control, valid concepts used during the wars in the Middle East. Modern doctrine assigns the majority of major naval operations to the Joint Force Maritime Component Commander (JFMCC).⁴⁶

The JFMCC is the geographic combatant commander's link to the sea and responsible for protection of Military Sealift Command (MSC) shipping (although tactical control of shipping reverts to MSC when escorting merchant ships).⁴⁷ The JFMCC construct integrates joint forces into major naval operations and campaigns and establishes maritime relationships throughout the GCC. There is no requirement to create another commander specifically focused on maritime trade defense.

While the JFMCC concept is clearly able to handle maritime trade defense in low intensity conflicts, it is unproven in a high intensity war or access denied environment. U.S. naval doctrine currently focuses the service on power projection, operation in the littorals, and humanitarian assistance/disaster relief. The U.S. Navy's most recent strategy document, *A Cooperative Strategy for 21st Century Seapower*, barely mentions the defense of maritime trade and does not specifically identify it as a naval warfare area of operation.⁴⁸ By not identifying maritime trade defense as a primary mission and centering on sea control, naval strategists seem to imply that the answer to maritime trade defense is to sink the enemy's fleet. The renewed focus on chokepoint control, while important, is a realistic option only when sea control is already achieved. The emphasis on maritime trade defense is diminished. For example, the Navy's most recent publication on convoys is based on land operations, not sea operations.⁴⁹ In general, the strategy appears to mirror the Japanese Admiralty during World War II, a Mahanian concept of sea command that failed to provide Japan with adequate force sustainment.

The JFMCC, centered on the operational level of war, is likely to have the same difficulties with command and control as operational commanders in World Wars I and II. Commanders became task saturated when dealing with all aspects of maritime trade defense,

and that was in a world order without the complications of globalization or cyber networking. Establishing a JFMTCC allows the JFMCC to focus purely on naval warfare, including joint integration into JFLCC and JFACC operations, naval force allocation, and coalition incorporation into offensive activities. The JFMTCC can focus on the operational functions of sustainment and protection, providing a direct link from the GCC to US TRANSCOM, coordinating joint and multi-national forces assigned to maritime trade defense, and improving port security unity of effort. The JFMTCC can work across the DIME, improving the relationship between the geographic combatant commander and diplomatic or economic entities in theater.

Conclusion

While the nature of warfare remains constant over time, new technologies and different world orders require military leaders to change the paradigms with which they approach old problems. Maritime trade defense in a high intensity, access denied environment requires a new approach that engages all aspects of the DIME. The Joint Force Maritime Trade Component Commander will give GCCs the command and control required for joint maritime trade defense in a globalized world, can improve unity of effort with respect to multi-national forces, other governmental agencies, and non-governmental agencies, and will provide unity of command for the protection of ports in hostile areas of operation. Nearly as important, a staff dedicated solely to maritime trade defense will allow geographic combatant commanders to apply the correct emphasis on sustainment and protection in a high intensity war. JFMTCCs can build their staff with cyber specialists and maritime trade professionals, including elements from the merchant marine, Coast Guard,

international officers, and potentially homeland defense experts. Finally, the JFMTCC can provide synergy between GCCs in different theaters in order to defend maritime trade in an increasingly globalized world. Incorporation of the Joint Force Maritime Trade Component Commander into the operational level of war improves our ability to sustain and protect logistics, increases our ability to win high intensity wars, and makes our nation safer.

Recommendations

1. Continue further studies on the affects of globalization and cyber networking when conducting offensive maritime trade warfare.
2. Immediately create a working group at the United States Naval War College, Newport, RI, to define the specific responsibilities of a Joint Force Maritime Trade Component Commander within geographic combatant commands.
3. Determine the doctrinal role of the JFMTCC, define the relationship between JFMTCC and other joint component commanders, and delineate relationship between JFMTCC and U.S. Transportation Command no later than 1 JAN 2013.
4. Establish Joint Force Maritime Trade Component Commander in PACOM as soon as possible but no later than 1 JUL 2013.
5. Establish a Joint Force Maritime Trade Component Commander in all geographic combatant commands no later than 1 JAN 2014.

Endnotes

¹ James Kurth, "The New Maritime Strategy: Confronting Peer Competitors, Rogue States, and Transnational Insurgents," Foreign Policy Research Institute, Orbis Magazine, Fall 2007, 588-590. Available at <http://www.fpri.org/orbis/5104/kurth.newmaritimestrategy.pdf>, (accessed on 4 May 2012).

² Jose Carreno, Thomas Culora, Captain George Galdorisi, U.S. Navy (Retired), and Thomas Hone, "What's New About the Air Sea Battle Concept?" U.S. Naval Institute Proceedings, August 2010. Available at <http://www.usni.org/magazines/proceedings/2010-08/whats-new-about-airsea-battle-concept>, (accessed 4 May 2012).

³ Throughout World War II, the Cabinet War Rooms Map Room officers plotted the movement of Allied convoys across the world. The quotation is from Lieutenant Commander D.P. Capper, RNVR, Map Room Officer 1941-1945, taken from a plaque in the Churchill War Rooms, 15 April 2012.

⁴ Julian S. Corbett, *Some Principles of Maritime Strategy* (London, New York, Bombay, and Calcutta: Longman's Green and Co, 1911), 268-280.

⁵ George W. Baer, *One Hundred Years of Sea Power: The U.S. Navy, 1890-1990* (Stanford, California: Stanford University Press, 1993), 69.

⁶ Ibid, 69-70.

⁷ Ibid, 70.

⁸ Ibid, 138.

⁹ In Baer's, *One Hundred Years of Sea Power: The U.S. Navy, 1890-1990*, Admiral King's CominChl; Admiral Ingersoll's CinClant; Rear Admiral Adolphus Andrews's Eastern Sea Frontier; and Rear Admiral Arthur Britol, Jr's destroyer force (whose mission was to escort ocean convoys on the western Atlantic) all had responsibility for maritime trade protection, 195.

¹⁰ GlobalSecurity.Org, "Sealift in World War II," <http://www.globalsecurity.org/military/systems/ship/sealift-ww2.htm>, (accessed 1 May 2012).

¹¹ Ibid, 203.

¹² David C. Evans and Mark R. Peattie, *Kaigun: Strategy, Tactics, and Technology in the Imperial Japanese Navy, 1887-1941* (Annapolis: Naval Institute Press, 1997), 495-497

¹³ The Japanese navy, army, Transportation and Communications Department, and Munitions Department all held responsibilities for maritime trade defense during World War II.

¹⁴ U.S. Transportation Division, *U.S. Strategic Bombing Survey: The War Against Japanese Transportation 1941-1945* (Washington, DC: U.S. Government Printing Office, 1947), 47. (Accessed 20 April 2012). http://www.scribd.com/haraoi_conal/d/47548665-United-States-Strategic-Bombing-Survey-The-War-Against-Japanese-Transportation-1941-1945-Transportation-Division-may-1947

¹⁵ George W. Baer, *One Hundred Years of Sea Power: The U.S. Navy, 1890-1990*. (Stanford, California: Stanford University Press, 1993), 235.

¹⁶ Sam J. Tangredi, ed *Globalization and Maritime Power* (Washington DC: National Defense University Press, 2002), XXV.

¹⁷ Captain Alfred T. Mahan, *The Influence of Sea Power Upon History 1660-1783* (New York: Dover Publications, 1987), 25-29.

¹⁸ GlobalSecurity.Org, "Sealift in World War II," <http://www.globalsecurity.org/military/systems/ship/sealift-ww2.htm> (accessed 1 May 2012).

¹⁹ Daniel Y. Coulter, "Globalization of Maritime Commerce: The Rise of Hub Ports," in *Globalization and Maritime Power*, ed. by Sam J. Tangredi et al. (Washington DC: National Defense University, 2002), 134.

²⁰ According to Daniel Y. Coulter, in 1997, Ford owned 154 factories, 58 vehicle operation plants (primarily for assembly), 55 powertrain plants, and 41 plants for automotive components, 135.

²¹ DIME is a political science term used to abbreviate: Diplomatic, Information, Military, Economic.

²² U.S. Department of Homeland Security, *Maritime Transportation System Security Recommendations for the National Strategy for Maritime Security*. (Washington DC: Department of Homeland Security, 2005), 1.

²³ TEU, or the twenty foot equivalent unit, is a unit of measure used by the merchant marine to indicate cargo size.

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- ²⁴ Daniel Y. Coulter, "Globalization of Maritime Commerce: The Rise of Hub Ports," in *Globalization and Maritime Power*, ed. by Sam J. Tangredi et al. (Washington DC: National Defense University, 2002), 137.
- ²⁵ Maersk Line. *About Us: About Maersk Line*. 2011. <http://www.worldslargestship.com/> (accessed April 22, 2012).
- ²⁶ Rear Admiral Kazumine Akimoto, "Re-routing Options and Consequences," Vol. 10, in *Papers in Australian Maritime Affairs: The Strategic Importance of Seaborne Trade and Shipping*, by RAN Sea Power Center, ed. by Andrew Forbes et al. (RAAF Fairbairn, Canberra: Australian Defence Force Academy, 2003), 114.
- ²⁷ IBS combines ECDIS, automatic radar plotting aid, ship control display systems, automatic steering control system, main engine room control, onboard weather route system, navigation sensor system and echo sounder.
- ²⁸ Dr Wei-Ming Ma, "Cyber Threats to Maritime Trade and Port Infrastructure," Vol. 10, in *Papers in Australian Maritime Affairs: The Strategic Importance of Seaborne Trade and Shipping*, by RAN Sea Power Center, ed. by Andrew Forbes et al. (RAAF Fairbairn, Canberra: Australian Defence Force Academy, 2003), 155-156.
- ²⁹ According to Dr. Wei-Ming Ma, EDI standard UN/EDIFACT provided by the UN is in worldwide use, 156.
- ³⁰ VTS incorporates ECDIS, electronic navigation chart applications, ARPA radar, harbor video monitoring systems, and vessel traffic management control to monitor vessels arriving and departing ports.
- ³¹ Dr Wei-Ming Ma, in "Cyber Threats to Maritime Trade and Port Infrastructure," identified that the U.S. Coast Guard reported that VTS had assisted in the safe movement of over 30,000 vessel transits and 5,000 deep-draft vessels annually in the Port of Los Angeles-Long Beach, an example of the new reliance on networking, 156-157.
- ³² James Kurth, "The New Maritime Strategy: Confronting Peer Competitors, Rogue States, and Transnational Insurgents," Foreign Policy Research Institute, Orbis Magazine, Fall 2007, 595. Available at <http://www.fpri.org/orbis/5104/kurth.newmaritimestrategy.pdf>, (accessed on 4 May 2012).
- ³³ Edward Wong, "China's Navy Reaches Far, Unsettling the Region," New York Times, 14 June 2011, accessed 1 April 2012. <http://www.nytimes.com/2011/06/15/world/asia/15china.html>
- ³⁴ The military boundary zone met protest from neighboring countries and is not recognized internationally. Donald R. Rothwell and Sam Bateman, ed., *Navigational Rights and Freedoms and the New Law of the Sea*, (Netherlands: Martinus Nijhof Publishers, 2000), 88. (Accessed 2 May 2012). http://books.google.com/books?id=e9z3h6uy7CYC&pg=PA88&lpg=PA88&dq=China+military+exclusion+zones&source=bl&ots=ZhUZH7f8-A&sig=Sf9Yem-y6AYA3mpyu_F9sTVyX1g&hl=en&sa=X&ei=kcyjT9jsKlyk8QTXn8SBCQ&ved=0CFEQ6AEwAQ#v=onepage&q=China%20military%20exclusion%20zones&f=false
- ³⁵ Seo Hang Lee, "Security of East Asian SLOCs and the Role of Navies," Vol. 10, in *Papers in Australian Maritime Affairs: The Strategic Importance of Seaborne Trade*, by RAN Sea Power Center, ed. by Andrew Forbes et al. (RAAF Fairbairn, Canberra: Australian Defence Force Academy, 2003), 179.
- ³⁶ Captain Alfred T. Mahan, *The Influence of Sea Power Upon History 1660-1783* (New York: Dover Publications, 1987), 30.
- ³⁷ Rear Admiral Kazumine Akimoto, "Re-routing Options and Consequences," Vol. 10, in *Papers in Australian Maritime Affairs: The Strategic Importance of Seaborne Trade and Shipping*, by RAN Sea Power Center, ed. by Andrew Forbes et al. (RAAF Fairbairn, Canberra: Australian Defence Force Academy, 2003), 114.
- ³⁸ John H. Noer and David Gregory, *Chokepoints: Maritime Economic Concerns in Southeast Asia*, (Washington, DC: National Defense University Press, 1996), 2.
- ³⁹ Rear Admiral Kazumine Akimoto, "Re-routing Options and Consequences," Vol. 10, in *Papers in Australian Maritime Affairs: The Strategic Importance of Seaborne Trade and Shipping*, by RAN Sea Power Center, ed. by Andrew Forbes et al. (RAAF Fairbairn, Canberra: Australian Defence Force Academy, 2003), 115.
- ⁴⁰ Jose Carreno, Thomas Culora, Captain George Galdorisi, U.S. Navy (Retired), and Thomas Hone, "What's New About the Air Sea Battle Concept?" U.S. Naval Institute Proceedings, August 2010. Available at <http://www.usni.org/magazines/proceedings/2010-08/whats-new-about-airsea-battle-concept>, (accessed 4 May 2012).
- ⁴¹ James Kurth, "The New Maritime Strategy: Confronting Peer Competitors, Rogue States, and Transnational Insurgents," Foreign Policy Research Institute, Orbis Magazine, Fall 2007, 589. Available at <http://www.fpri.org/orbis/5104/kurth.newmaritimestrategy.pdf>, (accessed on 4 May 2012).
- ⁴² Geoffrey Till, *Seapower: A Guide to the Twenty-First Century*. 2nd ed. (London and New York: Routledge, 2009), 232.

⁴³ Attacks on GPS are inferred from James Kurth's scholarship in, "The New Maritime Strategy: Confronting Peer Competitors, Rogue States, and Transnational Insurgents," when he discusses anti-satellite operations in Asia, 589.

⁴⁴ According to Joint Publication (JP) 4-01.2, the Navy, FBI, SDDC, USNORTHCOM, US Army Forces Command, FEMA, and other agencies, as well as commands acting with port readiness committees, play a role in harbor defense, III-8.

⁴⁵ International Maritime Organization, *International Ship and Port Facility Security Code and SOLAS Amendments 2002*. 2003 ed. (London: International Maritime Organization Publishing Service, 2003), 71.

⁴⁶ U.S. Department of Defense, *Command and Control for Joint Maritime Operations*, Joint Publication (JP) 3-32 (Washington DC: Department of Defense, 27 May 2008), I-2.

⁴⁷ U.S. Department of Defense. *Sealift Support to Joint Operations*, Joint Publication (JP) 4-01.2 (Washington DC: Department of Defense, 31 August 2005), III-5.

⁴⁸ U.S. Department of the Navy, *A Cooperative Strategy for 21st Century Seapower*. (Washington DC: Department of the Navy, October 2007). This document lacks formal page numbers.

⁴⁹ NTTP 4-01.3 is now the Multi Service Tactics, Techniques, and Procedures for Tactical Convoy Ops, dated January 2009, and only addresses land convoy operations.

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